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elevated region which separates our Indian possessions from Chinese Turkestan. Captain Montgomerie had already received the Society's Royal Medal for his adventurous explorations and his admirable trigonometrical observations, in these difficult mountainous countries on the extreme north of our Indian empire. The communication contained the result not only of the author's own observations, but also of those made by a well-informed Moonshee, an inhabitant of the Punjab, who was instructed by the author for the purpose of extending an outline survey to Yarkund.

1. *On the Geographical Position of Yarkund and other places in Central Asia.* By CAPTAIN T. G. MONTGOMERIE, R.E., Gold Medallist R.G.S.

THE author stated, that whilst employed as astronomical assistant of the Great Trigonometrical Survey of India, in surveying Kashmir, Little Thibet, and the neighbouring provinces, he always kept in view the possibility of making a reconnaissance of the countries lying to the north of the Mustakh and Karakorum ranges. He at length succeeded in finding an intelligent Moonshee, named Mahomed-i-Hameed, willing to run the risk of carrying instruments to Yarkund, in Eastern Turkestan, to fix its position, besides surveying the route thither from the trigonometrical stations in Ladak. He was trained by Captain Montgomerie to take observations for latitude with a small sextant, to record the temperature of the air, and of boiling water, and to make a rough skeleton route-survey from point to point. He started in the summer of 1863, and after spending the winter in Yarkund, making his observations secretly by night, returned over the mountain passes in the following spring; his return being hastened by the threats of the Chinese authorities, whose suspicions were aroused by his proceedings. Unfortunately, the Moonshee died when within a short distance of one of the surveying stations, but his papers were all preserved and given up to Captain Montgomerie. The latitude of Yarkund proved to be $38^{\circ} 19' 46''$, and the longitude, as deduced from his route survey, $77^{\circ} 30' \text{ E.}$; the altitude was 4000 feet above the sea-level. The march across the mountains, to the watershed dividing India from Turkestan, occupied fifty-one days, a result which gives a grand idea of the enormous scale of the Himalayan ranges. The road for twenty-five days was over country never lower than 15,000 feet, and for forty-five days not lower than 9000. The distance, in a straight line from Jummoo to Yarkund, is 430 miles, so that the mountains are at least 400 miles across at their smallest breadth. The winter at Yarkund was very severe, the thermometer, early in January, falling nearly to zero, and from the 19th to the 26th January snow fell; the sky, however, was

generally clear. The Moonshee was much struck with the fertility of the surrounding country. Although the province is ruled by a Chinese official, and the city garrisoned by Chinese troops, the mass of the population is Mahommedan, and ruled in ordinary matters by its own Governor subordinate to the Chinese.

Captain Montgomerie exhibited a large and characteristic sketch of the Mashabrum Peak, the most conspicuous mountain in the Mustakh and Karakorum range. The peak is visible between two large glaciers, and from near Kapaloo a clear rise of about 18,000 feet is seen at one glance,—a most magnificent sight; Kapaloo being about 8000 feet above the sea, and the peak itself 26,000 feet. Behind the Mashabrum Peak lies the peak K_2 , which rises to 28,257 feet above the sea, being the highest in the range and the second highest in the world. K_2 is surrounded on all sides by very lofty peaks, and is consequently never seen to great advantage.

Captain Montgomerie also exhibited a sketch of a large portion of the Mustakh Range, taken from above the desolate plains of Weosai, at an elevation of about 16,000 feet. In this sketch, Captain Montgomerie delineated a number of other peaks east and west of Skardo, the capital of Little Thibet. In a third sketch, drawn by Lieut. Carter, R.E., the whole of the Mustakh Range to the west of Captain Montgomerie's sketch was shown; the most westerly snowy peak being still 19,000 feet above the sea, and the range apparently showing no signs of decreasing altitude. In all, the sketches exhibited showed about 200 miles of the great Mustakh and Karakorum range.

The paper will be printed *in extenso* in the Journal, vol. xxxvi.

The PRESIDENT commended the author for having conducted the arduous survey of so large a portion of the North-western Provinces of India with such perfect success, and in addition having had the sagacity to instruct a native Mahommedan to carry an outline survey over regions still further north, where it was not possible for our own explorers to penetrate. As no European traveller had ever visited Yarkund, the communication was of the very highest importance to geographers. The President also added, that the meeting being honoured with the presence of the Rajah of Johore, a territory lying north of Singapore, he could not let the occasion pass without stating that his Highness had expressed to him how much it had gratified him to find, on his arrival in this country, that Englishmen were taking such an intense interest in everything connected with Asia and his own country. His Highness stated that he was doing all he could towards the improvement of his country by making a road of a considerable length, and by establishing railroads throughout his territory.

Sir ANDREW WAUGH (late Surveyor-General of India) said he could quite corroborate what the President had said regarding the extreme value of the paper. It was a great gratification to him to find a pupil of his own distinguishing himself for his geodetic operations in the Himalayas and geographical discoveries, and that the Council of the Society had conferred upon

him, in the previous year, one of their gold medals. Captain Montgomerie had now presented to the Society a paper of a different nature, indeed, from the detailed trigonometrical work which he had carried on with so much success, but into which, although it was an analysis of approximate geographical materials, he had imported all the care and scrupulosity used in the Great Trigonometrical Survey of India. That great work was carried on with a degree of refinement which might be indicated by fractions of an inch. On this account the point of departure of the Moonshee's expedition was correctly fixed, and as the direction of his route was chiefly meridional, the estimates of longitude were to be relied on, for any error in the length of the journey would not make any great difference in the result. He therefore believed that the longitude of Yarkund had now been determined better than it had ever before been. There might be some wonder felt that there was so much uncertainty about places situated at so short a distance from our Indian frontier. The reason was, that the intermediate region was mountainous, the climate excessively severe, and the people were fanatics, amongst whom it was very difficult to travel. The Government of India would not allow any enterprising officers to explore the country, however much they desired to do so. The plan adopted by the author was the only one by which the exploration, under existing political conditions, could be made. The history given in the paper respecting Mahomed-i-Hameed, the Moonshee, was very interesting, and his untimely fate was most touching. He (Sir Andrew) recollected that ten years ago, when he was organising the survey on which Captain Montgomerie had been employed, they discussed the awful difficulties there were in the way. There never had been astronomical instruments carried up to such enormous heights. They had to cross two ranges of snowy mountains, the peaks of which had never been trodden by the foot of man or even any animal, and the natives in charge of the signals had to live on the mountains for several days together. He must do the natives the justice to say, that they well withstood the cold, and endeavoured to promote the success of the survey. The operations were carried on during the Indian mutiny, but none of the natives engaged in the exploring party rebelled, although the mountains were made the refuge of sepoys, who were pursued by the British troops. Besides the physical obstacles, Captain Montgomerie had to encounter political difficulties in Kashmir and Ladakh of no ordinary kind. He was surveying the country of a foreign potentate, but to his other merits he added a talent for diplomacy, and made himself so agreeable to the Court that he made friends there; and thus, instead of being obstructed, the party received a great deal of support from the Maharajah, and the Court remained friendly all through the period of the mutiny.

Sir HENRY RAWLINSON believed that sufficient attention had not been paid by geographers to the countries which the paper related to. Many persons present might imagine that the survey in which Captain Montgomerie had been engaged was a matter of no especial difficulty, being in our own possessions: but such was not the case. In reality the whole of this magnificent survey had been conducted in provinces which belonged to independent potentates, and this struck him as a most marvellous feat. The diplomacy which enabled the officer charged with the mission to make such a careful and elaborate geodetic survey in a foreign country, was very remarkable. The territory beyond our northern frontier in India was one of the greatest possible interest. It was in reality the debatable ground between India and Russia, and must naturally become more interesting year by year as we went on towards our future destiny. We had now, through Sir Andrew Waugh and Captain Montgomerie, carried a careful survey from our own frontier up to the Karakorum range, and even beyond; while the Russians had come down to the other great chain, the Thian Shan, below

Lake Issyk-kul: there was now, therefore, only a small strip of from 250 to 300 miles across, between the Thian Shan and Yarkund, remaining to be laid down. When that was done, Central Asia would be brought into the category of known geography. At a former meeting he (Sir Henry) had followed the steps of an anonymous German traveller, who claimed to have explored a part of the region described by Captain Montgomerie. The German traveller alleged that he started from Srinagur, the capital of Kashmir, and reached Kashgar in 24 days. He (Sir Henry Rawlinson) observed that Captain Montgomerie's Moonshee took 66 days to march from Jummoo, a place near Srinagur, to Yarkund, and that number of days corresponding with the period which he (Sir Henry) contended would be occupied in the route which the German stated he accomplished in 24 days. Captain Montgomerie's observations were thus a verification of the exceptions which he (Sir Henry) had taken to the narrative of the supposed German traveller. Very much still remained to be done with regard to the geography of the region; but he thought that the impetus which had now been given to the inquiry would increase, and would produce important results. The plan which had been initiated by Capt. Montgomerie, of employing natives in these preliminary surveys or reconnaissances, was certainly a most desirable one. They might not be able to use delicate scientific instruments with great precision, but they were quite competent for all the purposes of a reconnaissance survey, and they had facilities not possessed by Europeans for penetrating into distant and difficult regions. The Council of the Society had that day performed a very graceful act in awarding, subject to the approval of the General Meeting, a watch of the value of 25 guineas to one of these native explorers, whose journey across the Pamir steppes, from Kashgar to Kokhan, he (Sir Henry Rawlinson) had recently communicated to the Society. If Captain Montgomerie's Moonshee had lived he would have been a very deserving object for a similar recognition. It was by acts such as this that the Society most effectually discharged the functions which the present state of geographical science required of it. It was its duty to extend a helping hand wherever Europeans or natives were ready to make explorations, so that through their means a mass of information might be collected which Mr. Arrowsmith and the practical men of the day would be able to reduce into a form of direct geographical value.

2. *Rough Notes of a Visit to Daba, in Thibet, in August, 1865.* By
Captain ADRIAN BENNETT, Royal Fusiliers.

BEING unsuccessful in the pursuit of the game of Thibet, viz., *ovis ammon*, yāk, and burrel, and being disgusted with the small bag I had made during the fortnight I had been in the country, I determined to go and see Daba, the capital of that part of Thibet in which I was, viz., that portion adjoining the province of British Gurhwal, and which is the only part of Thibet open to Europeans, and then under the surveillance of a Tartar guard furnished by the Zumpun, or headman, of Daba, a Chinese official. I was curious to see a place which was so studiously shut out from European eyes: so much so, that since the year 1810 there is no record of any European ever having been to the place; more especially as my shikary could or would not give me any information as to what it was like, but steadily persisted in saying that no sahīb had ever